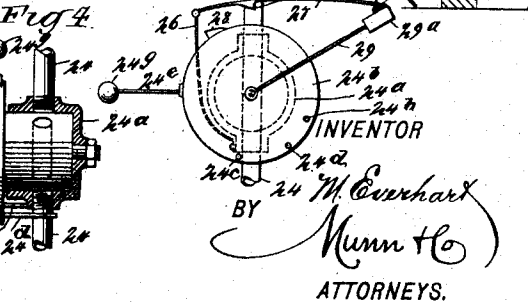
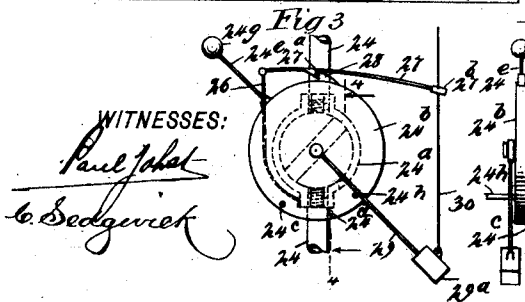
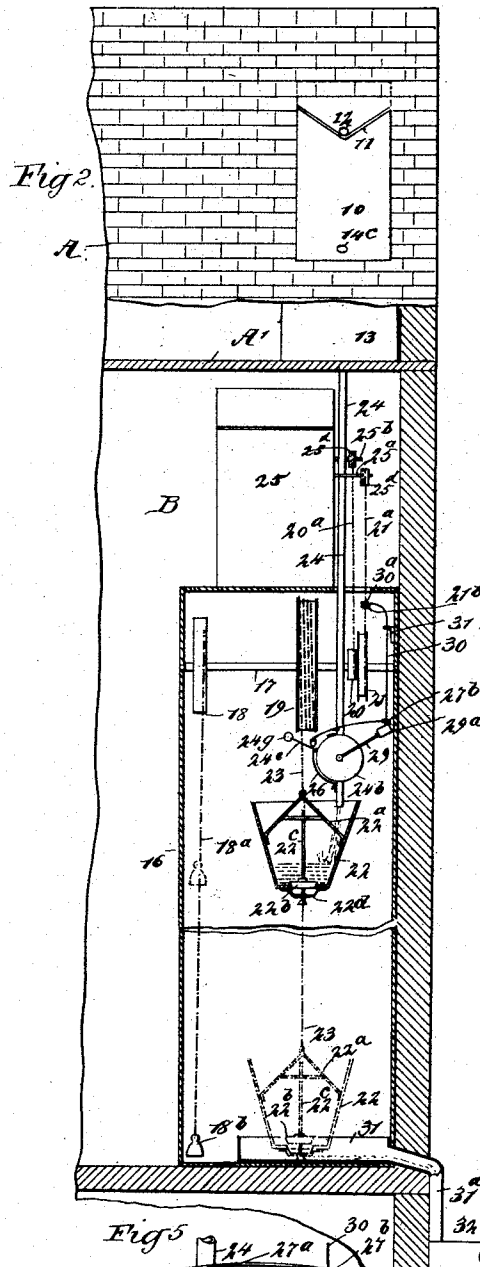
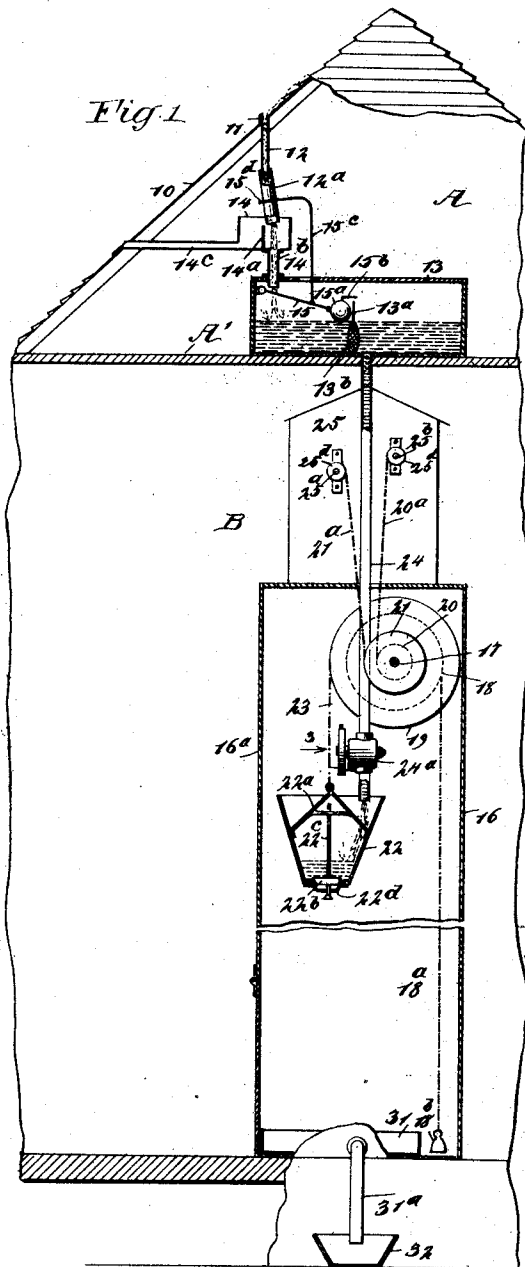


(No Model.)

M. EVERHART.
CLOCK WINDING MECHANISM.

No. 505,704.

Patented Sept. 26, 1893.



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MARTIN EVERHART, OF AUSTIN, TEXAS.

CLOCK-WINDING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 505,704, dated September 26, 1893.

Application filed May 10, 1893. Serial No. 473,688. (No model.)

To all whom it may concern:

Be it known that I, MARTIN EVERHART, of Austin, in the county of Travis and State of Texas, have invented a new and useful Improved Apparatus for Winding Clocks, of which the following is a full, clear, and exact description.

This invention relates to an improved mechanism for the periodical automatic winding of clocks by water power, and has for its object to provide an apparatus that will be adapted to utilize the power afforded by the gravity of water discharged at regular intervals from a tank, which is in an elevated position and is supplied with water by rain fall or other means.

To this end my invention consists in the construction and combination of parts, as is hereinafter described and claimed.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar figures and letters of reference indicate corresponding parts in all the views.

Figure 1 is a rear view of the device partly in section, in a building shown broken and in section. Fig. 2 is a sectional side view of the apparatus and a sectional side view broken, of the building containing the improvement. Fig. 3 represents an enlarged side view of a detail of construction located opposite the arrow 3 in Fig. 1. Fig. 4 is a partly sectional side view of the detail shown in Fig. 3, on the line 4—4 in said figure; and Fig. 5 represents the parts shown in Fig. 3, differently adjusted from that indicated in said figure.

It is a feature of the invention, to utilize rain water for the periodic movement of the automatically winding mechanism of the clock, that is to be thus kept running regularly for an indefinite period. To this end, the volume of water that falls during a rain upon a certain area of a house roof, is caught and stored in a tank, from which it is discharged in a manner and at such times as will adapt the gravity of the discharged water to operate novel mechanism, that in turn winds the clock connected thereto, at predetermined intervals of time.

In the drawings A, represents a portion of a building having a pitched roof, in one sloped side of which roof a sheet metal piece 10, is

introduced as indicated in Fig. 1; said plate may be a part of the roof, or be imposed on it in a manner that will adapt it to receive rain on its exposed surface, and by means of a raised ledge 11, formed or secured on the plate, direct rain water from the roof portion above said ledge into a vertically descending pipe 12, that with its upper end taps the plate 10, above the ledge.

A tank 13, of sufficient capacity for the retention of an ample volume of rain water is provided and located on the floor A', of the building below the roof and preferably with one end below the pipe 12, said tank being covered.

Below and near to the pipe 12, a water trap 14, is placed, occupying a position between the lower end of said pipe and the tank 13.

As shown, the trap 14, consists of a box that is of a suitable capacity to serve as a funnel for the reception and discharge of rain water that will pass down through pipe 12, and in the trap an upright partition 14^a, is erected which is preferably made lower than the top edge of the trap, which latter is provided with a discharge pipe 14^b, that extends from its bottom into the tank 13, and may serve as a support for the trap box, as shown in Fig. 1.

A waste pipe 14^c, is extended from the end of the trap 14, toward the roof of the building, and projects through it to permit the escape of water from the trap box that may enter it between the partition wall 14^a and end wall of the trap from which the waste pipe extends.

Within the tank 13, a partition wall 13^a is erected and a filtering screen 13^b, is introduced therein, which will arrest dirt and leaves that may enter the tank through the pipe 12, the latter being extended for the controlled discharge of water, by a vibratile pipe section 12^a, that is pivoted by its upper end to the lower end portion of the vertical pipe 12, and is of such a relative length as will permit its free lower end to be swung across the partition wall 14^a, so as to discharge water it receives, on either side of said partition.

On the end wall of the tank 13, that is near to the discharge pipe 14^b, a lever 15, is pivoted by one of its ends, the free end having a float 15^a secured upon it, from which a limb 15^b, projects, that extends above the top edge

of the partition 13^a, and will rest on it when the float is caused to descend by its gravity toward the bottom of the tank.

From the lever 15, a standard 15^c, is erected, which extends through an aperture in the lid of the tank 13, to a proper height to permit a ring 15^d formed on the terminal of its laterally bent upper end, to loosely encircle the body of the vibratile pipe section 12^a, as shown in Fig. 1.

An upright casing 16, is erected in a room B of the building A, preferably below the tank 13, said casing having a portion of one of its sides 16^a, hinged to the other fixed portion so that the upper part of the case side may be lowered to expose interior parts.

Within the casing 16, near its upper end, a horizontal shaft 17, is journaled by its ends in the front and rear walls of the casing as represented in Fig. 2, and on said shaft the pulley wheels 18, 19, 20 and 21, are secured.

There is a water receptacle 22, provided, which may be shaped as shown in Figs. 1 and 2, or be given any other preferred form, the material from which it is produced being sheet metal, or other equally light and strong and thin material that is waterproof and rigid, said receptacle or pail having a firmly secured bail handle 22^a, extended from near its upper edge, to which bail a cord 23, is attached by one end, its opposite end engaging the periphery of the preferably spiral grooved pulley wheel 19, whereby the pail is suspended, and adapted for a vertical reciprocation when the shaft 17 is rotated alternately in opposite directions.

There is a suitable aperture formed in the bottom of the water pail 22, that is normally closed by a valve 22^b, which is secured on a valve stem 22^c, that loosely engages its lower projected end with the perforated bracket loop 22^d, which is affixed upon the pail bottom, the upper portion of the stem sliding freely through a perforated horizontal brace plate that is a fixture on the bail 22^a.

From the bottom wall of the tank 13, a water conductor pipe 24, is downwardly extended of a proper length to permit the pail 22, to receive water therefrom when the latter is in elevated adjustment, as will be further explained. In the body of the pipe 24, a plug valve 24^a, is introduced, the plug of which valve is furnished at one end with a disk 24^b, for its rotatable movement, which movement is limited by the check pins 24^c, 24^d, that project at a proper distance apart from the side of the disk nearest to the body of the valve, and upon each side of the discharge end of the conductor pipe 24, as plainly shown in Figs. 3, 4 and 5. It will be noticed, that when the pin 24^c has contact with said pipe, the water passage through the valve plug will align with the bore of the pipe 24, and thus afford a clear water way through the valve, a rocking adjustment of the valve plug that brings the other pin 24^d, in contact with the conductor pipe effecting a complete closure

of the valve, as represented by dotted lines in Fig. 3.

On the edge of the disk 24^b, an arm 24^e, is radially projected and has a weight 24^f, secured upon its outer end, the disposition of the latter causing the plug of the valve to rotate sufficiently to locate the pin 24^c, against the pipe 24, and open the valve, if the plug is free to move as stated.

On the casing 16, the clock 25, is mounted, at a point that will locate the rear wall of its case adjacent to the water conductor pipe 24, and from this side of the clock case the spring winding arbors 25^a, 25^b, are projected outwardly of a proper length to receive the pulleys 25^d, that are secured on them. The relative positions of the arbors 25^a, 25^b, which respectively support and are affixed to the spring that drives the time measuring gear train, and the spring which actuates the striking mechanism of the clock, (not shown) adapts the pulleys thereon, to be flexibly connected to the pulleys 20 and 21, by the cords 21^a and 20^a, that are attached by their ends upon the peripheries of the pulleys mentioned. The cords 21^a, 20^a, are given such a relative length, as will permit them to hang slackened when the pail 22, is located near the conductor pipe 24, and they are secured to the pulleys they respectively engage, on sides of the latter, that will adapt the regular running movement of the arbors 25^a, 25^b, to wind up said slackness of the cords mentioned.

On the pulley 18, a cord 18^a, is secured by one end, and upon the other end a weight 18^b, is attached, the latter having a heft sufficient to overcome the weight of the empty pail 22, and friction of parts, so that when the weight is elevated by the wrapped engagement of the cord 18^a, with the periphery of the pulley 18, its subsequent descent will be adapted to elevate the pail to a point where it may receive water from the conductor pipe 24, the diameter of the pulley 18, and length of the cord thereon being arranged to permit the weight 18^b, to rest on the bottom of the casing 16, when the pail 22, is at a proper height.

On the side of the valve body 24^a, that is nearest to the arm 24^e, a bracket post 26, is secured by its lower end, the upper end of said post affording support for one end of a latch bar 27 that is pivoted thereto, said bar having a catch hook 27^a, projected from its lower side, that will interlock with a similar catch hook 28, formed on the periphery of the disk 24^b, at such a point as will detachably retain the valve plug in closed adjustment and the weighted arm 24^e, elevated above a horizontal plane, as represented in Fig. 3, this interlocking engagement being effected by the gravity of the latch bar when it is free to fall and have its hook 27^a, brought into contact with the periphery of the disk 24^b.

The reduced end of the plug in valve 24^a, projects through the perforated valve body at its center, forming a watertight joint there-

with, and opposite from the plug end that sustains the disk 24^b. On said projected end of the plug a rocking lever 29, is loosely secured by one end, its outer end having a weight 29^a, affixed to it, which weight is heavier than weight 24^a. Hence lever 29, will normally lie in lowered adjustment. From the outer face of the disk 24^b, a pin 24^b, is projected; this pin being located at a proper distance above pin 24^a, is impinged upon by lever 29, which will cause the disk to rock, close the valve, and hold the arm 24^c, upwardly and outwardly projected, as shown in Fig. 3.

A tripping rod 30, is furnished, which has its lower end loosely secured to the weight 29^a, and projects upwardly through an eyehole 27^b, on the end of the latch bar 27, also passing through a bracket block 31, that is fixed on the side of the casing 16, the upper portion of the tripping rod being bent to extend its end in the path of the cord 21^a, which cord passes through the ring eye 30^a, that is formed on the end of the tripping rod, the weight of the latter co-acting with the weight of the rocking lever and weight 29^a, to depress these connected parts.

An enlargement 21^b, is formed on or secured to the cord 21^a, between the end of the latter that is secured to the pulley 21, and the ring eye 30^a, which projection when brought into contact with the tripping rod 30, will elevate it and the rocking lever 29.

In the casing 16, a waste water pan 31, is located resting on the bottom wall of the same, and from the pan a spout 31^a, is extended through the wall of the house, so as to convey any water that enters the pan out of the building and discharge it into a vessel 32, or upon the ground.

The tank 13, may be supplied with water by hand to start the apparatus, or if the inflow of rain water is awaited, the clock can be wound manually by a rotation of the arbors 25^a, 25^b.

The fall of rain upon the building roof, will cause an inflow of water through the pipe 12, and vibratile pipe section 12^a, that is adjusted to convey the water into the pipe 14^b, by the depression of the lever 15, which is held at a proper angle by the seated engagement of the horizontal limb 15^b, with the top edge of the partition 13^a. It will be observed, that when the water stored in the tank 13, reaches a proper elevation, the upward movement of the float 15^a, will vibrate the pipe section 12^a, and direct a further inflow of water, into the waste pipe 14^c, from which it will escape upon the roof of the building, and thus avoid an overflow of the tank.

When the tank 13 is charged with water, the conductor pipe 24, will be filled with water from the tank, the plug of the valve 24^a, preventing an escape of water when it is in closed adjustment, which adjustment is effected while the cords 20^a, 21^a, are slackened, the latter named condition resulting when the pail 22, is elevated by the weight 18^b to be

filled with water and when this is effected, said pail, by the increase of weight thus produced is caused to descend and impinge the lower end of the valve stem 22^c, upon the bottom of the pan 31, thus opening the valve 22^b, and permitting water in the pail to flow therefrom.

The slackened condition of the cords 20^a, 21^a, will be taken up on the pulleys 25^a, 25^b, by the rotation of the arbors 25^a, 25^b, as they are impelled by their winding springs, and when the cord 21^a, having the projection 21^b, is so wound upon the pulley of the arbor 25^a, as to elevate the weight 29^a a proper degree, the rocking lever 29, will be raised and the latch bar 27 also, thus releasing the disk 24^b, which will be sufficiently rotated by the weighted arm 24^c, to cause the hole in the plug of the valve 24^a, to align with the bore of the pipe 24, and permit a free flow of water from the tank 13 into the pail 22, that has been previously elevated by the fall of the weight 18^b, and rotation of the shaft 17 effected thereby.

It will be seen that the descent of the filled water pail 22, causes the taut cords 20^a, 21^a, to rotate the arbors 25^a, 25^b, periodically, a sufficient degree to rewind the driving springs of the clock, the length of the cords named and relative diameters given to the pulleys engaged by them, determining the intervals of time between successive windings of the springs, which may be made so frequent, that the maximum strength of the springs for driving purposes, may be maintained, and the clock be caused to run more regularly and keep better time, than if wound by hand less frequently.

If preferred, the pulley 18, cord 18^a, and weight 18^b, may be dispensed with and the elevation of the pail 22, be effected more gradually, by the running movement of the arbors 25^a, 25^b that will take up the cords 20^a, 21^a, and rotate the shaft 17, in a proper direction to wrap the cord 23, on the pulley 19, which will effect the hoisting movement of the pail in an obvious manner.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. An apparatus for winding clocks, comprising an elevated water supply, a conductor pipe depending therefrom and having a plug valve at its lower end, a casing supporting the clock, a vertically reciprocating water receptacle in the casing, having a gravity valve in its base, a horizontal shaft rotatable in the casing, having pulleys thereon, flexible connections between said pulleys and pulleys on the winding arbors of the clock, and a device for operating the valve of the conductor pipe and controlled by one of said flexible connections, substantially as described.

2. An apparatus for winding clocks, comprising an elevated tank in a building, means to direct rain water from the roof of the building into said tank, a conductor pipe depending from the tank and having a plug valve at

its lower end, a casing supporting the clock,
 a vertically reciprocating water receptacle in
 the casing, adapted to discharge water from
 its base when lowered, a horizontal shaft ro-
 5 tatably supported in the casing, having pul-
 leys thereon, flexible connections between
 said pulleys and pulleys on the winding ar-
 bors of the clock, and a device for operating
 the valve of the conductor pipe, controlled by
 10 one of said flexible connections, substantially
 as described.

3. An apparatus for winding clocks, com-
 prising an elevated tank in a building, means
 to direct rain water from the roof of the build-
 15 ing into said tank, a device controlling the
 water supply for the tank, a conductor pipe
 depending from the tank, having a plug valve
 at its lower end, a casing supporting the clock,

a horizontal shaft in the upper part of the
 casing, pulleys on said shaft, a water recep- 2
 tacle suspended by a flexible connection from
 one of said pulleys, and adapted to receive
 water from the conductor pipe when elevated,
 a normally closed valve in the bottom of the
 receptacle, adapted to open by pressure from 2
 below, flexible connections between the pul-
 leys on the shaft and pulleys on the winding
 arbors of the clock, and a device controlled
 by one of said flexible connections, for oper-
 ating the valve of the conductor pipe, sub- 3
 stantially as described.

MARTIN EVERHART.

Witnesses:

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 JOHN T. WILSON.